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PLASMA TV

MANUAL DE SERVICIO

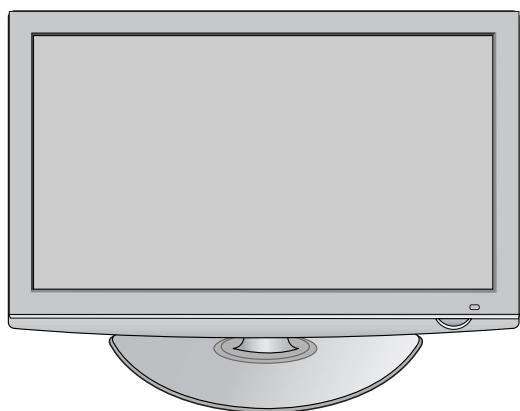
CHASIS : PP91A

MODELO : 42PQ30R

42PQ30R-MA

ATENCIÓN

Antes de dar servicio al chasis, lea las PRECAUCIONES DE SEGURIDAD en este manual.



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PRECAUCIONES DE SEGURIDAD

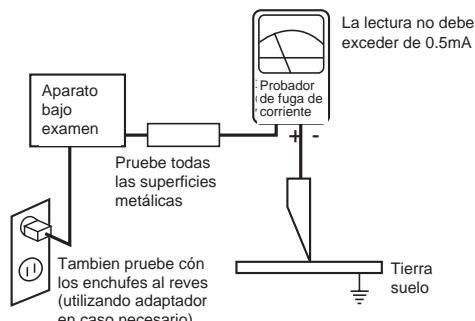
ADVERTENCIA: Antes de dar servicio a este chasis, lea "PRECAUCIONES RESPECTO A RADACION POR RAYOS X", "INSTRUCCIONES DE SEGURIDAD" y "AVISO SOBRE SEGURIDAD DE PRODUCTOS"

INSTRUCCIONES DE SEGURIDAD

1. Cuando el receptor está en operación, se producen voltajes potencialmente tan altos como 25,000-29,000 voltios. Operar el receptor fuera de su gabinete o con la tapa trasera removida puede causar peligro de choque eléctrico.
 - (1) Nadie debe intentar dar servicio si no está debidamente familiarizado con las precauciones que son necesarias cuando se trabaja con un equipo de alto voltaje.
 - (2) Siempre descargue el ánodo del tubo de la imagen a tierra para evitar el riesgo de choque eléctrico antes de remover la tapa del ánodo.
 - (3) Descargue completamente el alto potencial del tubo de imagen antes de manipularlo. El tubo de la imagen es de alto vacío y, si se rompe, los fragmentos de vidrio salen despedidos violentamente.
2. Si se quemara algún fusible de este receptor de televisión, reemplácelo con otro especificado en la lista de partes.
3. Cuando reemplace tableros o plaquetas de circuitos, cuidadosamente enrolle sus alambres alrededor de las terminales antes de soldar.
4. Cuando reemplace un resistencia de vataje (resistor de película de óxido metálico) en el Tablero o Plaqueta de circuitos, mantenga la resistencia a un mínimo de 10mm de distancia.
5. Mantenga los alambres lejos de componentes de alto voltaje o de alta temperatura.
6. Este receptor de televisión debe conectarse a una fuente de 100 a 240 V AC.
7. Antes de devolver este aparato al cliente, haga una verificación de fuga de corriente sobre las partes metálicas del gabinete expuestas, tales como antenas, terminales, cabezas de tornillos, tapas de metal, palancas de control etc., para estar seguro de que el equipo funciona sin peligro de choque eléctrico. Enchufe el cordón directamente al tomacorriente de la línea de AC 100-240V.

No utilice una línea aislada de transformador durante esta verificación. Use un voltímetro de 1000 Ohmios por voltio de sensibilidad o más, en la forma que se describe a continuación.

Cuando la unidad está ya conectada a la AC, pulse el commutador primero poniéndolo en "ON" (encendiendo) y luego en "OFF" (apagando), mida desde un punto de tierra conocido, tal como una (cañería de metal, una manija metálica, una tubería etc.) a todas las partes metálicas expuestas del receptor de televisión (antenas, manijas de metal, gabinetes de metal, cubiertas de metal, palancas de control etc.,) especialmente cualquiera de las partes metálicas expuestas que puedan ofrecer un camino hacia el chasis. Ninguna medición de corriente eléctrica debe exceder de 0.5 miliamperios. Repita la prueba cambiando la posición del enchufe en el tomacorriente. Cualquier medición que no esté dentro de los límites especificados aquí representan un riesgo potencial de choque eléctrico que debe ser eliminado antes de devolver el equipo al cliente.



AVISO SOBRE SEGURIDAD DE PRODUCTOS

Muchas de las partes, electricas y mecánicas en este chasis tienen características relacionadas con la seguridad. Estas características frecuentemente pasan desapercibidas en las inspecciones visuales y la protección que proporcionan contra la RADACION DE RAYOS-X no siempre necesariamente se obtiene al mismo grado cuando se reemplazan piezas o componentes diseñados para voltajes o vatajes mayores, etc. Las piezas que tienen estas características de seguridad se identifican por la marca impresa sobre el diagrama esquemático. Antes de reemplazar alguno de esos componentes, lea cuidadosamente la lista de este manual. El uso de partes de reemplazo que no tengan las mismas características de seguridad, como se especifica en la lista de partes, puede crear Radiacion de Rayos-X.

ESPECIFICACIONES

NOTE : Specifications and others are subject to change without notice for improvement.

✓ Application Range

This spec is applied to PDP TV used PP91A/B Chassis.

Chassis	Model Name	Market	Brand	Remark
PP91A/B	50PQ30R-MA	Central and South America	LG	
	50PQ60R-TA	NON-EU		
	42PQ600R-ZA	EU		
	42PQ200R-ZA	EU		
	50PQ200R-ZA	EU		
	42PQ70BR-TA	NON-EU		
	42PQ60R-MA	Central and South America		
	42PQ30R-TA	NON-EU		

✓ Specification

Each part is tested as below without special appointment.

- 1) Temperature : $25\pm 5^{\circ}\text{C}$ ($77\pm 9^{\circ}\text{F}$), CST : 40 ± 5
- 2) Relative Humidity: $65\pm 10\%$
- 3) Power Voltage: Standard Input voltage (100-240V~, 50/60Hz)
 - * Standard Voltage of each product is marked by models.
- 4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with SBOM.
- 5) The receiver must be operated for about 20 minutes prior to the adjustment.

✓ Test Method

- 1) Performance : LGE TV test method followed.
- 2) Demanded other specification
 - Safety : CE, IEC specification
 - EMC : CE, IEC

Model Name	Market	Remark	Appliance
42PQ600R-ZA	EU	Safety: IEC/EN60065, EMI: EN55013, EMS: EN55020	TEST
42PQ200R-ZA			
50PQ200R-ZA			
50PQ60R-TA	NON-EU	Safety: IEC/EN60065, EMI: CISPR13	TEST
42PQ70BR-TA			
42PQ30R-TA			
50PQ30R-MA	Central and South America		
42PQ60R-MA			

✓ Module Specification

(1) 42" XGA

No	Item	Specification	Remark
1	Display Screen Device	42 inch 16:9 Color plasma Display Module	PDP
2	Aspect Ratio	16:9	
3	PDP Module	PDP42G2####, RGB Closed Type	Glass Filter
4	Operating Environment	1) Temp. : 0 ~ 60deg 2) Humidity : 20 ~ 80%	LGE SPEC.
5	Storage Environment	3) Temp. : -20 ~ 60deg 4) Humidity : 10 ~ 90%	
6	Input Voltage	AC100-240V~, 50/60Hz	Maker: LGIT

(2) 50" WXGA

No	Item	Specification	Remark
1	Display Screen Device	50 inch 16:9 Color plasma Display Module	PDP
2	Aspect Ratio	16:9	
3	PDP Module	PDP50G2####, RGB Closed(Well) Type	Glass Filter
4	Operating Environment	1) Temp. : 0 ~ 55deg 2) Humidity : 20 ~ 80%	LGE SPEC.
5	Storage Environment	3) Temp. : -10 ~ 60deg 4) Humidity : 10 ~ 90%	
6	Input Voltage	AC100-240V~, 50/60Hz	Maker: LGIT

(3) 50" FHD

No	Item	Specification	Remark
1	Display Screen Device	50 inch 16:9 Color plasma Display Module	PDP
2	Aspect Ratio	16:9	
3	PDP Module	PDP50H3####, RGB Closed Type	Glass Filter
4	Operating Environment	1) Temp. : 0 ~ 55deg 2) Humidity : 20 ~ 80%	LGE SPEC.
5	Storage Environment	3) Temp. : -10 ~ 60deg 4) Humidity : 10 ~ 90%	
6	Input Voltage	AC100-240V~, 50/60Hz	Maker: LGIT

✓ Model General Specification

(1) EU Spec.(ZA)

No	Item	Specification			Remark
1.	Market	EU			
2.	Broadcasting system	PAL BG/I/DK, SECAM			SECAM-L spec out
3.	Available Channel	BAND	PAL		
		VHF/UHF CATV	C1 ~ C69 S1 ~ S47		
4.	Receiving system	Upper Heterodyne			
5.	SCART Input(2EA)	PAL			Full Scart 1EA, Harf 1EA
6.	Video Input (1EA)	PAL			Side 1EA
7	Component Input (1EA)	Y/Cb/Cr, Y/ Pb/Pr			
8	RGB Input (1EA)	RGB-PC			
9	HDMI Input	2EA	HDMI-DTV, Only PCM MODE		
		3EA	Rear HDMI 2EA Rear HDMI 2EA, Side HDMI 1EA (Only 42/50PQ600R-ZA)		
10	Audio Input (5EA)	PC Audio, AV (3EA), Component (1EA)			L/R Input(PC 1EA, SCART 2EA, SIDE AV 1EA Component 1EA)
11	USB Input(1EA)	SD Divx, MP3, JPEG			42/50PQ200R-ZA: USB Spec out (Only SW Download) 42/50PQ300R-ZA: Only apply for MP3, JPEG (SD Divx Spec out) 42/50PQ600R-ZA: apply SD Divx, MP3, JPEG

(2) NON-EU Spec.(TA)

No	Item	Specification			Remark					
1	Market	NON EU / CHINA								
2	Broadcasting system	PAL/ SECAM/BG/I/DK, NTSC-M								
3	Available Channel	BAND	PAL	NTSC		China(DK)	Australia(BG)			
		VHF/UHF CATV	E2 ~ C69 S21 ~ S47	2 ~78 1 ~ 71						
4	Receiving system	Upper Heterodyne								
5	Video Input (2EA)	PAL,SECAM, NTSC			Rear 1EA, Side 1EA					
6	AV Output (1EA)	PAL,SECAM, NTSC			Rear 1EA (Variable OUT, MNT OUT)					
7	Component Input (2EA)	Y/Cb/Cr, Y/ Pb/Pr								
8	RGB Input (1EA)	RGB-PC								
9	HDMI Input	2ea	HDMI-DTV , Only PCM MODE			Rear HDMI(2) : Only for PQ30R				
		3ea				Side HDMI(1), Rear HDMI(2)				
11	Audio Input (5EA)	AV (2EA)			L/R Input(PC 1EA, Component 2EA, Rear 1EA, Side 1EA)					
12	RS-232C (1EA)	Remote control								
13	USB Input (1EA)	SD Divx, MP3, JPEG,			SIDE USB 1EA					

(3) Central and South America(MA)

No	Item		Specification		Remark
1	Market		Central and South America		
2	Broadcasting system		NTSC, PAL-M, PAL-N		
3	Available Channel	BAND	NTSC		
		VHF	2 ~ 13		
		UHF	14 ~ 69		
		CATV	1 ~ 125		
4	Receiving system		Upper Heterodyne		
5	Video Input (2EA)		NTSC, PAL-M/N		Rear 1EA, Side 1EA
6	AV Output (1EA)		NTSC, PAL-M/N		Rear 1EA (Variable OUT, MNT OUT)
7	Component Input (2EA)		Y/Cb/Cr, Y/ Pb/Pr		
8	RGB Input (1EA)		RGB-PC ,		
9	HDMI Input (2EA)	2ea	HDMI-DTV, Only PCM MODE		Rear HDMI(2) : Only for PQ30R
		3ea			Side HDMI(1), Rear HDMI(2)
10	Audio Input (5EA)		PC Audio, Component(2EA) AV (2EA)		L/R Input(PC 1EA, Component 2EA, Rear 1EA, Side 1EA)
11	RS-232C (1EA)		Remote control		
12	USB Input (1EA)		Divx, MP3, JPEG,		SIDE USB 1EA

INSTRUCCIONES DE AJUSTE

1. Application Range

This spec sheet is applied to all of the PP91A/B chassis.

2. Specification

- (1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.
- (2) Adjustment must be done in the correct order.
- (3) The adjustment must be performed in the circumstance of $25\pm5^{\circ}\text{C}$ of temperature and $65\pm10\%$ of relative humidity if there is no specific designation.
- (4) The input voltage of the receiver must keep $100\sim240\text{V}$, $50/60\text{Hz}$.
- (5) The receiver must be operated for about 5 minutes prior to the adjustment when module is in the circumstance of over 15°
 - In case of keeping module is in the circumstance of 0°C , it should be placed in the circumstance of above 15°C for 2 hours
 - In case of keeping module is in the circumstance of below -20°C , it should be placed in the circumstance of above 15°C for 3 hours.,

3. S/W Program Download

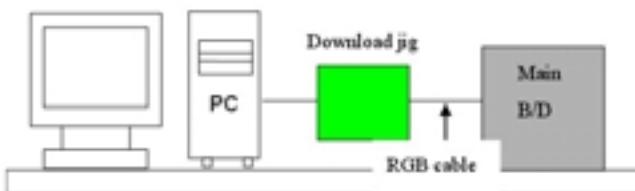
3-1. Profile

This is for downloading the s/w to the flash memory of the IC603

3-2. Equipment

- (1) PC
- (2) ISP_tool program
- (3) Download jig

3-3. Connection Structure



3-4. Connection Condition

- (1) IC name and circuit number : Flash Memory and IC603
- (2) Use voltage : 3.3V (5 pin)
- (3) SCL : 15 pin
- (4) SDA : 12 pin
- (5) Tact time : about 2min and 30seconds

3-5. Download Method (By using MSTAR JIG)

(1) Preliminary Steps



- 1) Connect the download jig to D-sub jack



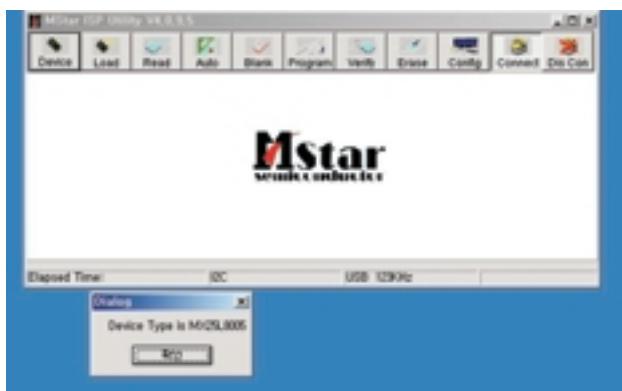
- 2) Connect the PC to USB jack

(2) Download Steps

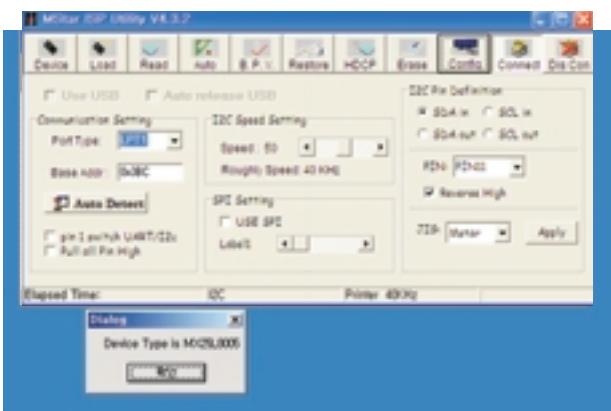
- 1) Execute 'ISP Tool' program in PC, then a main window will be opened



2) Click the connect button and confirm "Dialog Box".



3) Click the Config button and Change speed E2PROM Device setting : over the 350Khz



4) Read and write bin file

Click "(1)Read" tab, and then load download file(XXXX.bin) by clicking "Read".



5) Click "Auto(2)" tab and set as below

6) Click "Run(3)".

7) After downloading, check "OK(4)" message.



3-6. Download Method (By using USB Memory Stick)

[Caution]

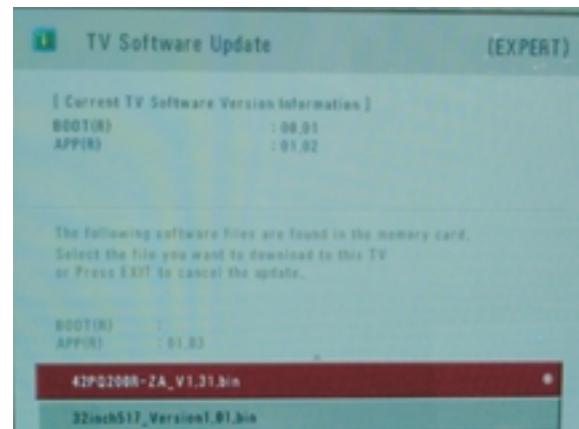
- Using 'power on' button of the control R/C, power on TV.
- USB file (EPK) version must be bigger than downloaded version of main B/D.

- (1) Using 'Power ON' button of the control R/C, Power on TV.
- (2) Insert the USB memory stick to the SET.
- (3) Display USB loding message then, push the 'Exit' Key of control R/C
- (4) Push the 'MENU' Key and move the cusor 'OPTION' of OSD (Fig. 1)
 - * Caution: Don't push the 'OK' key.Just cusor is on the 'OPTION' menu.



(Fig. 1)

- (5) Push the "7" key of control R/C continuously.
Then, Display "TV Software Update" Pop-up menu. (Fig. 2)



(Fig. 2)

- (6) Select SW file (XXXX.bin) you want, push the "OK" Key.
 (7) S/W download process is excuted automatically.

4. PCB Assembly Adjustment Method

4-1. Option Adjustment Following BOM

Tool Option
 Area Option
 Option 1
 Option 2
 Option 3(Available for EU & Non EU model)

MODEL : XXXXXX Module : XXXX
 S/W Ver. : X.XX ROM : XXXXXXXX
 UTT X Temp : xxxxx : Celsius
 ADC CAL.
 RGB : OK
 Component SD OK
 Component HD OK
 EDID RGB(OK) HDMI1(OK) HDMI2(OK) HDMI3(OK)
 Tool Option 4
 Area Option 40
 Option 1 17
 Option 2 40
 :

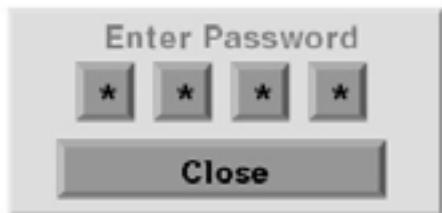
MODEL : XXXXXX	Module : XXXX
S/W Ver. : X.XX	ROM : XXXXXXXX
UTT X	Temp : xxxxx : Celsius
ADC CAL.	
RGB :	OK
Component SD	OK
Component HD	OK
EDID	RGB(OK) HDMI1(NG) HDMI2(NG) HDMI3(NG)
Tool Option	4
Area Option	40
Option 1	17
Option 2	40
:	

MODEL : XXXXXX Module : XXXX
 S/W Ver. : X.XX ROM : XXXXXXXX
 UTT X Temp : xxxxx : Celsius
 ADC CAL.
 RGB : OK
 Component SD OK
 Component HD OK
 EDID RGB(OK) HDMI1(OK) HDMI2(OK) HDMI3(OK)
 Tool Option 4
 Area Option 40
 Option 1 17
 Option 2 40
 :

(Fig. 3)

- * Profile: Must be changed the option value because being different with some setting value depend on module, inch and market
- * Equipment : Adjustment Remote Controller

- (1) Push the IN-START key in the Adjust R/C.
- (2) Enter Password number. The value of Password is "0 0 0 0".



- (3) Input the Option Number that was specified in the BOM, into the Shipping area.
- (4) Select "Tool Option/ Area Option" by using △/▽ (CH+/-) key, and press the number key(0~9) consecutively
 ex) If the value of Tool Option1 is 4, input the data using number key "4" (Fig. 3)

Caution: Don't Push "IN-STOP" key after PCB assembly adjustment.

(5) EDID D/L Method

After software D/L or PCBA manufacturing, you can download EDID Data.

When you adjust Tool Option, H6 Model EDID download process is executed automatically

* If the model don't have HDMI 3, HDMI 3 will be disappeared at OSD Window.

Caution: When you adjust tool option, don't connect HDMI or D-sub cable.
 If you connect some cable, EDID D/L process will be failed.

(6) Adjustment method

Before PCBA check, have to change the Tool option and Area option

[About PDP

After done all adjustments, Press IN-START button and compare Tool option and Area option value with its BOM, if it is correctly same then Change "RF mode" and then unplug the AC cable.

If it is not same, then correct it same with BOM and unplug AC cable.

For correct it to the model's module from factory JIG model.

[Don't push The IN-STOP KEY after completing the function inspection.

5. EDID(The Extended Display Identification Data)

Originally H6(PP91A/B) Model EDID download process is executed when you adjust Tool Option.

[Caution]

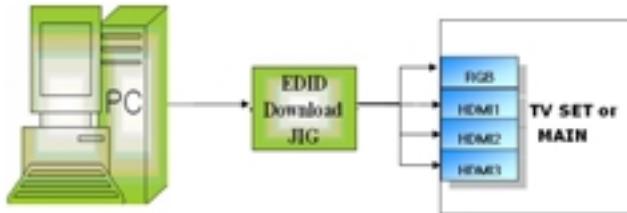
- Use the proper signal cable for EDID Download
- Never connect HDMI & D-SUB Cable at the same time.
- Use the proper cables below for EDID Writing

5-1. Profile: To be possible for plug and play

5-2. Equipment

- (1) Adjusting PC with S/W for writing EDID Data.(S/W: EDID TESTER Ver.2.5)
- (2) A Jig for EDID Download
- (3) Cable : Serial(9Pin or USB) to D-sub 15Pin cable, D-sub 15Pin cable, DVI to HDMI cable.

5-3. Connection Structure



Connection Diagram of EDID

Caution: Never connect HDMI & D-SUB Cable at the same time.

5-4. EDID Data

NO	Item	Condition	16 ^{bit} Data
1	Manufacturer ID	GSM	1E6D
2	Version	Digital : 1	01
3	Revision	Digital : 3	03

o WXGA EDID DATA(50inch)

<Analog(RGB) : 128bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01
0010	0B	12	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	00	00	31	40	45	40	61	40	01	01	01	01
0030	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	40	00
0040	35	00	BC	88	21	00	00	1C	0E	1F	00	80	51	00	1E	30
0050	40	80	37	00	BC	88	21	00	00	18	00	00	00	FD	00	3A
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	00	17	

<HDMI 1 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01
0010	0B	12	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	00	00	31	40	45	40	61	40	01	01	01	01
0030	01	01	01	01	01	01	01	1D	00	72	51	D0	1E	20	6E	28
0040	55	00	C4	8E	21	00	00	1E	9C	0A	D0	8A	20	E0	2D	10
0050	10	3E	96	00	13	8E	21	00	00	18	00	00	00	FD	00	3A
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	00	53	
0080	02	03	26	F1	50	01	07	16	02	03	11	12	13	84	14	05
0090	20	21	22	F1	10	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	20	00	B9	2D	00	01	1D	00	72	51	D0	1E	20	6E	28
00B0	55	00	C4	8E	21	00	00	1E	9C	0A	D0	8A	20	E0	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	49

<HDMI 2 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01
0010	0B	12	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	00	00	31	40	45	40	61	40	01	01	01	01
0030	01	01	01	01	01	01	01	1D	00	72	51	D0	1E	20	6E	28
0040	55	00	C4	8E	21	00	00	1E	9C	0A	D0	8A	20	E0	2D	10
0050	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	53
0080	02	03	26	F1	50	01	07	16	02	03	11	12	13	84	14	05
0090	20	21	22	F1	10	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	30	00	B9	2D	00	01	1D	00	72	51	D0	1E	20	6E	28
00B0	55	00	C4	8E	21	00	00	1E	9C	0A	D0	8A	20	E0	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	39

<HDMI 3 : 256bytes> SIDE HDMI(HDMI 3) is adjusted above 60Tool model

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01
0010	0B	12	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	00	00	31	40	45	40	61	40	01	01	01	01
0030	01	01	01	01	01	01	01	1D	00	72	51	D0	1E	20	6E	28
0040	55	00	C4	8E	21	00	00	1E	9C	0A	D0	8A	20	E0	2D	10
0050	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	53
0080	02	03	26	F1	50	01	07	16	02	03	11	12	13	84	14	05
0090	20	21	22	F1	10	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	30	00	B9	2D	00	01	1D	00	72	51	D0	1E	20	6E	28
00B0	55	00	C4	8E	21	00	00	1E	9C	0A	D0	8A	20	E0	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	39

<HDMI 4 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01
0010	0B	12	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	00	00	31	40	45	40	61	40	01	01	01	01
0030	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	40	00
0040	34	00</td														

<HDMI 1 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01	
0010	0B	12	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25	
0020	11	49	4B	20	00	00	01	01	01	01	01	01	01	01	01	01	
0030	01	01	01	01	01	01	01	1D	00	80	51	D0	1C	20	40	80	
0040	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	
0050	10	3E	96	00	13	8E	21	00	00	18	00	00	00	FD	00	3A	
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	20	00	00	FC	
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	4B	
0080	02	03	26	F1	50	07	01	16	02	03	11	12	13	84	14	05	
0090	20	21	22	1F	10	23	09	07	07	83	01	00	00	68	03	0C	
00A0	00	20	00	0B	2D	00	01	1D	00	80	51	D0	1C	20	40	80	
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00	
00D0	00	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00	
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	51	

<HDMI 2 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01	
0010	0B	12	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25	
0020	11	49	4B	20	00	00	01	01	01	01	01	01	01	01	01	01	
0030	01	01	01	01	01	01	01	1D	00	80	51	D0	1C	20	40	80	
0040	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	
0050	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	3A	
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	20	00	00	FC	
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	4B	
0080	02	03	26	F1	50	07	01	16	02	03	11	12	13	84	14	05	
0090	20	21	22	1F	10	23	09	07	07	83	01	00	00	68	03	0C	
00A0	00	20	00	0B	2D	00	01	1D	00	80	51	D0	1C	20	40	80	
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00	
00D0	00	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00	
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	41	

<HDMI 3 : 256bytes> SIDE HDMI(HDMI 3) is adjusted above
60Tool model

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01	
0010	0B	12	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25	
0020	11	49	4B	20	00	00	01	01	01	01	01	01	01	01	01	01	
0030	01	01	01	01	01	01	01	1D	00	80	51	D0	1C	20	40	80	
0040	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	
0050	10	3E	96	00	13	8E	21	00	00	18	00	00	00	FD	00	3A	
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	20	00	00	FC	
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	4B	
0080	02	03	26	F1	50	07	01	16	02	03	11	12	13	84	14	05	
0090	20	21	22	1F	10	23	09	07	07	83	01	00	00	68	03	0C	
00A0	00	30	00	0B	2D	00	01	1D	00	80	51	D0	1C	20	40	80	
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00	
00D0	00	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00	
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	31	

6. HDCP(High-Bandwidth Digital Contents Protection) Download

HDCP download process is deleted in H6 models
In H6 models, it is using the EEPROM masking HDCP Key

7. Manual ADC Adjustment (Component 1, RGB)

[Caution]

- Do not connect external input cable
- Adjustment result is applied to SET On/Off later.

RF input	AV / Component / RGB input
NO SIGNAL or White noise	NO SIGNAL

* Adjustment is done using internal ADC, so input signal is not necessary.

7-1. COMPONENT ADC (SD / HD)

- (1) Convert to Component1 input source.
- (2) Press ADJ key on R/C for adjustment.
- (3) Enter Password number. The value of Password is "0 0 0 0".
- (4) Select "0. ADC calibration" by using D/E(CH +/-) and press ENTER(v).
- (5) Start ADC adjustment by using F/G(VOL +/-) or press ENTER(v).
- (6) ADC adjustment is executed automatically .

OK

When ADC adjustment is finished, this OSD appear.

Notice : After All mode check, set the Speaker Volume "0".

Notice : From this sentence, All working is mass production.

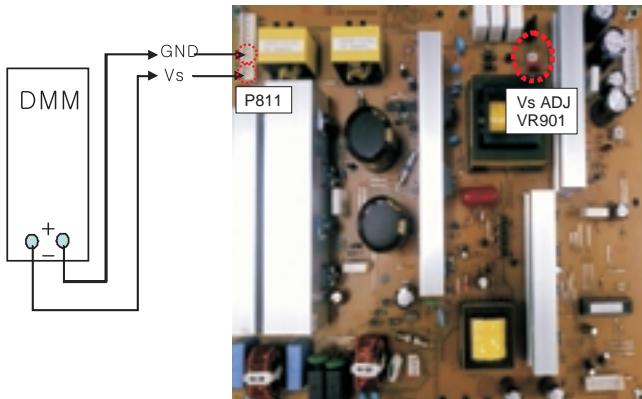
8. POWER PCB Assy Voltage Adjustment

(Vs voltage Adjustment)

8-1. Test Equipment: D.M.M 1EA

8-2. Connection Diagram for Measuring

Refer to (Fig. 4)



(Fig. 4)

8-3. Adjustment Method

(1) Vs Adjustment

- 1) Connect + terminal of D. M..M. to Vs pin of P702, connect -terminal to GND pin of P702.
- 2) After turning VR901, voltage of D.M.M adjustment as same as Vs voltage which on label of panel right/top (deviation ; $\pm 0.5V$)

(4) PC (for communication through RGB)

(5) Pattern Generator (MSPG-925FA etc.)

-Before white balance, press the ADJ key and select third row like (Fig. 5)

-To enter White-balance mode, Enter Password Number "0 0 0" and select third row.

[Caution: System control Host should be "DDC" for adjustment.

EZ ADJUST

0. ADC CALIBRATION : TV
1. ADC ADJUST
2. SUB B/C ADJUST
- 3. W/B ADJUST**
4. WHITE PATTERN : OFF
5. EDID D/L

(Fig. 5)

(6) Adjust W/B DATA, for all CSM, choose 'COPY ALL'

3. W/B ADJUST

Mode	: TV
TEMPERATURE	: Medium
R-Gain.	: 192
G-Gain.	: 192
B-Gain.	: 192
R-Offset	: 128
G-Offset	: 128
B-Offset	: 128
COPY ALL	

(Fig. 6)

9. Adjustment of White Balance

9-1. Purpose and Principle for Adjustment of the Color Temperature

- (1) Purpose: Adjust the color temperature to reduce the deviation of the module color temperature.
- (2) Principle : To adjust the white balance without the saturation, Fix the one of R/G/B gain to C0 and decrease the others.
- (3) Adjustment mode: Two modes of Cool, Warm and Medium

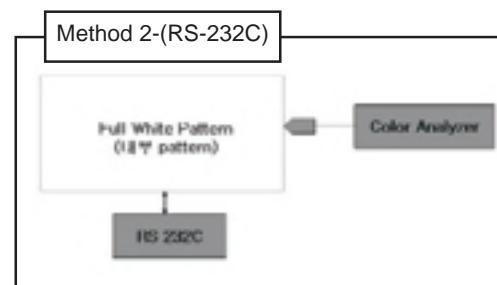
9-2. Required Equipment

- (1) Remote controller for adjustment
- (2) Color Analyzer : CA-100+ or CA-210 or same product - PLASMA TV(ch : 10)
- (3) Auto W/B adjustment instrument(only for Auto adjustment)
- Do the white balance adjustment under the 10LUX

[Notice: When using the Color Analyzer with PDP, recommend the CA-100 more than CA-210.
If CA-100 can not available, it is also good to use the CA-210.

9-3. Connecting Diagram of Equipment for Measuring (For Automatic Adjustment)

(Method 2, using RS-232C, You connect RS-232C Cable)



(1) Enter the adjustment mode of the white balance

- Enter the white balance adjustment mode at the same time heat-run mode when pushing the power on by power only key

- Maintain the white balance adjustment mode with same condition of Heat-run
- Maintain after AC off/on in status of Heat-run pattern display

(2) Release the white balance adjustment mode

- Release the adjust mode after AC off/on or std-by off/on in status of finishing the Hear-run mode
- Release the Adjust mode when receiving the aging off command(F3 00 00) from adjustment equipment)

(3) Enter the adjust mode of white balance

- Enter the white balance adjustment mode with aging command(F3, 00, FF)

9-4. Adjustment of White Balance for Manual Adjustment (method 3)

Adjustment mode: Three modes of Cool, Medium(Vivid) and Warm

- Equipment : 1) Color analyzer(CA100+, CA210) should be used in the calibrated ch by CS-1000(PDP : CH10)
- 2) Adjustment remocon

- For manual adjustment, it is also possible by the following sequence.

Operate the zero-calibration of the CA-100+ or CA-210, then stick sensor to the module when adjusting.

- (1) Select white pattern of heat-run by pressing "POWER ON" key on remote control for adjustment then operate heat run longer than 5 minutes. (recommend)
(If not executed this step, the condition for W/B will be different)
- (2) Changing to the AV mode by remote control.(Push front-AV)
- (3) Input external pattern(85% white pattern).
- (4) Stick sensor to center of the screen and select each items (Red/Green/Blue Gain and Offset) using D/E(CH +/-) key on R/C..
- (5) Adjust R/ G/ B Gain using F/G(VOL +/-) key on R/C.
- (6) Adjust three modes of Cool, Medium(Vivid) and Warm as below figure.
(Fix the one of R/G/B and change the others)
- Push the "VOL + " key : Cool, Medium, Warm

Mode	Color coordinate		Temp	Δuv
	X	Y		
Cool	0.276–0.002	0.283–0.002	11,000K	+0.000
Medium	0.285–0.002	0.293–0.002	9,300K	+0.000
Warm	0.313–0.002	0.329–0.002	6,500K	+0.003

[Refer to the below case to know what value is fixed.

[CASE]

First adjust the coordinate much away from the target value(x, y).

1. x, y > target
1) Decrease the R, G.

2. x, y < target
1) First decrease the B gain,
2) Decrease the one of the others.

- In case of decreasing the x, decreasing the R : fix G
- In case of decreasing the y , decreasing the G : fix R

3. x > target , y < target

- 1) First decrease B, so make y a little more than the target.
- 2) Adjust x value by decreasing the R

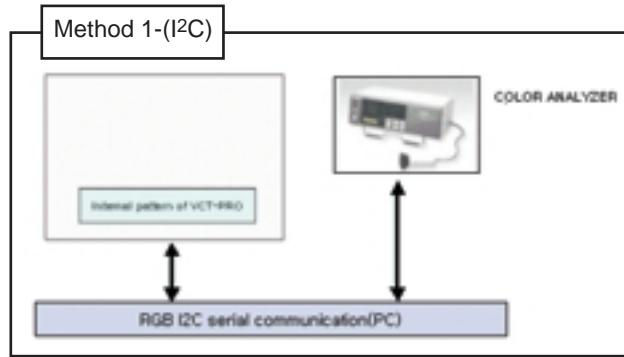
4. x < target , y > target

- 1) First decrease B, so make x a little more than the target.
- 2) Adjust x value by decreasing the G

- (7) When adjustment is completed, Exit adjustment mode using EXIT key on R/C.

9-5. Connecting diagram of Equipment for Measuring (For Automatic Adjustment)

(method 1, using IIC, You connect RGB Cable)



(1) Enter the adjustment mode of the white balance

- Enter the white balance adjustment mode at the same time heat-run mode when pushing the power on by power only key
- Maintain the white balance adjustment mode with same condition of Heat-run
- Maintain after AC off/on in status of Heat-run pattern display

(2) Release the white balance adjustment mode

- Release the adjust mode after AC off/on or std-by off/on in status of finishing the Hear-run mode
- push the "power on" key(IIC Mode) on Adjust remote-controller.
- Release the Adjust mode when receiving the aging off command(F3 00 00) from adjustment equipment)

(3) Enter the adjust mode of white balance

- Enter the white balance adjustment mode with aging command(F3, 00, FF)

o Color Temperature & Color Coordinates Setting

- When adjusting the Color Temperature, Color Analyzer CA-210(Matrix should be corrected through CH10 of CS-1000) should be used. When CA-210 have used, it don't need to fit the CH10.
- Adjust the Color Temperature based below adjustment color coordinates.

o Target Value CA-210(LCD : CH 9, PDP : CH10), CA-100(PDP)

(Standard color coordinate and temperature when using the CA-100+ or CA210 equipment)

Mode	Color coordinate		Temp	Δuv
	X	Y		
Cool	0.276–0.002	0.283–0.002	11,000K	+0.000
Medium	0.285–0.002	0.293–0.002	9,300K	+0.000
Warm	0.313–0.002	0.329–0.002	6,500K	+0.003

○ Above optical characteristics are should be measured by following condition.

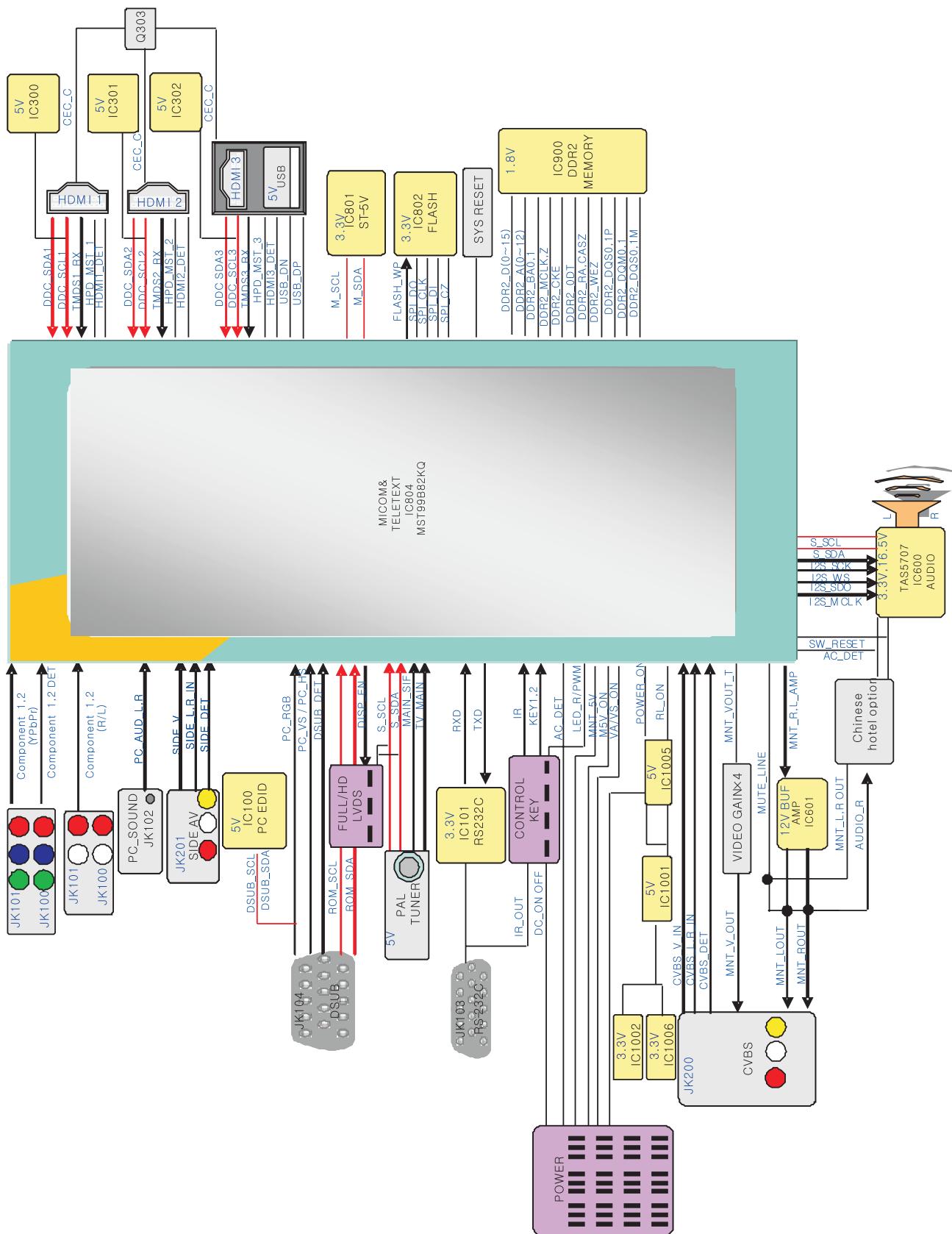
	Measured Mode
Picture Mode	Vivid
Fresh Contrast	Off
Fresh Color	Off
Smart Power Saving	Intelligent Sensor Level 0

○ DDC Adjustment Command Set

No.	Adjustment content	CMD(HEX)	ADR	VALUE	detail
1	Aging On/Off	F3	00	FF/00	00 : OFF 01 : ON FF : WB Ready
2	Input select	F4	00		0x10 : TV 0x20 : AV1 0x21 : AV2 0x23 : AV3 0x40 : Component1 0x41 : Component2 0x60 : RGB PC 0x90 : HDMI1 0x91 : HDMI2 0x92 : HDMI3
3	R GAIN	16	00	00 - FE	Gain Adjustment CSM COOL
4	G GAIN	18		00 - FE	
5	B GAIN	1A		00 - FE	
6	R GAIN	16	01	00 - FE	Gain Adjustment CSM MEDIUM
	G GAIN	18		00 - FE	
	B GAIN	1A		00 - FE	
	R GAIN	16	02	00 - FE	Gain Adjustment CSM WARM
	G GAIN	18		00 - FE	
	B GAIN	1A		00 - FE	
	CSM mode	F2	00	00	COOL
				01	MEDIUM
				02	WARM
	EEPROM Read	E7	00	00	EEPROM read
	EEPROM Write	E8	00	data	EEPROM write

[R/G/B GAIN max value : C0

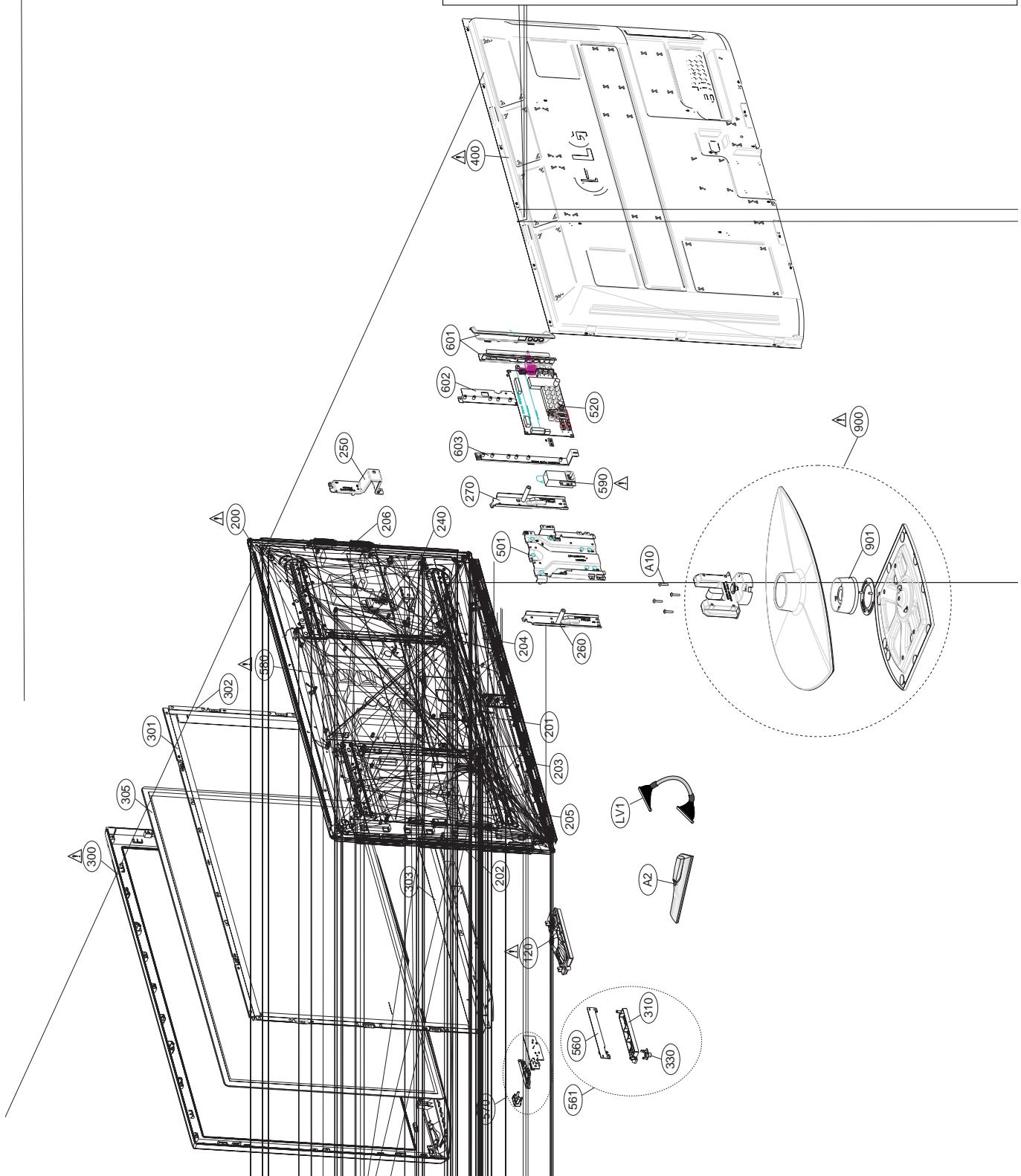
DIAGRAMA EN BLOQUE



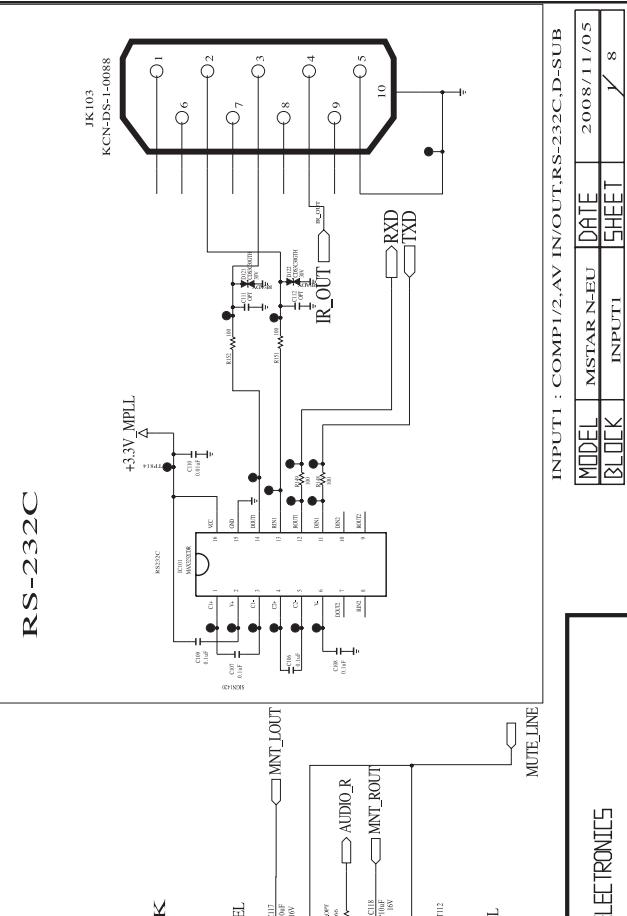
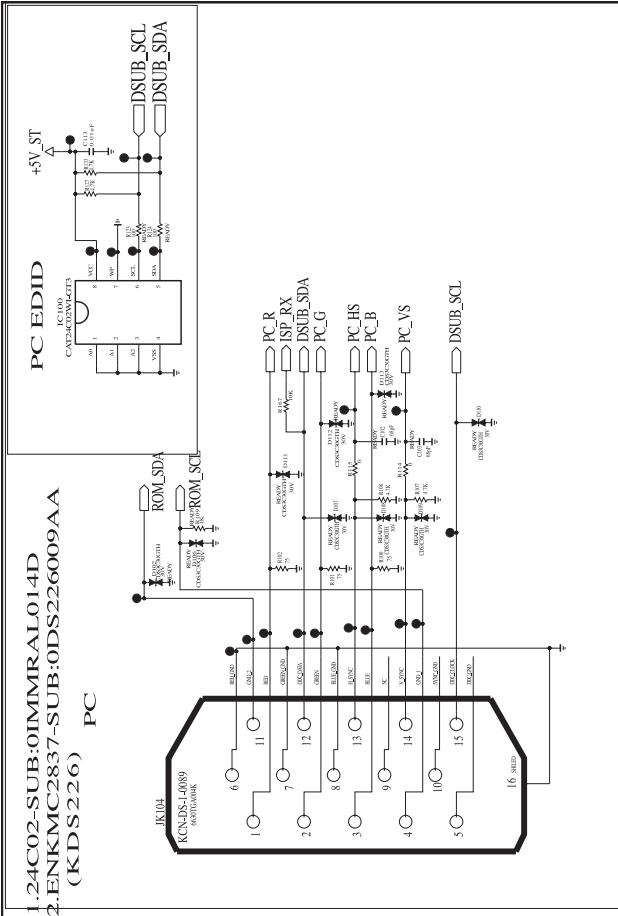
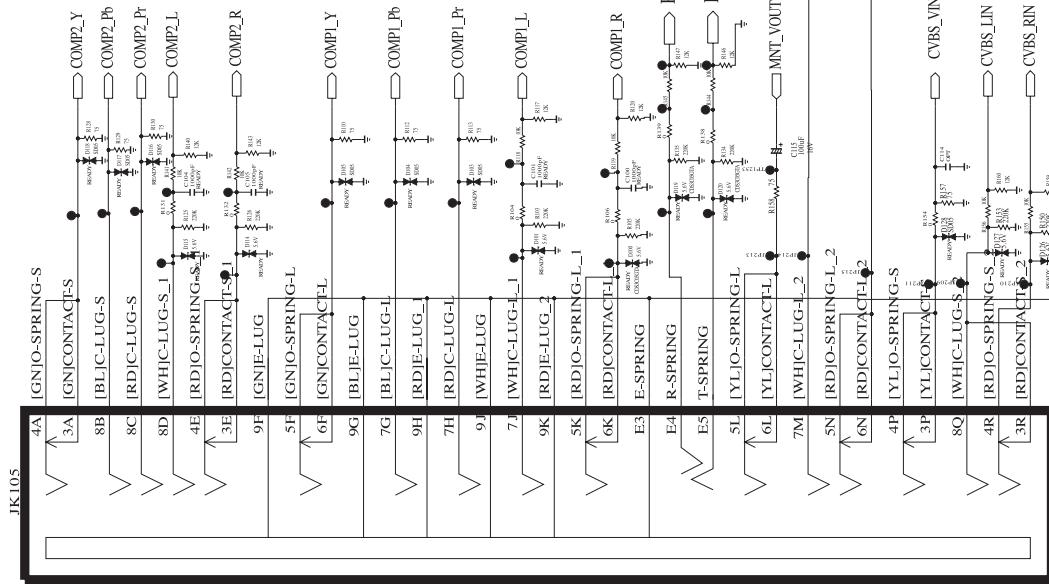
VISTA EN DESPIECE

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by  in the Schematic Diagram and EXPLODED VIEW. It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards. Do not modify the original design without permission of manufacturer.



EAX60695401
INSTAR PDP NONEU



PP1223
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THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

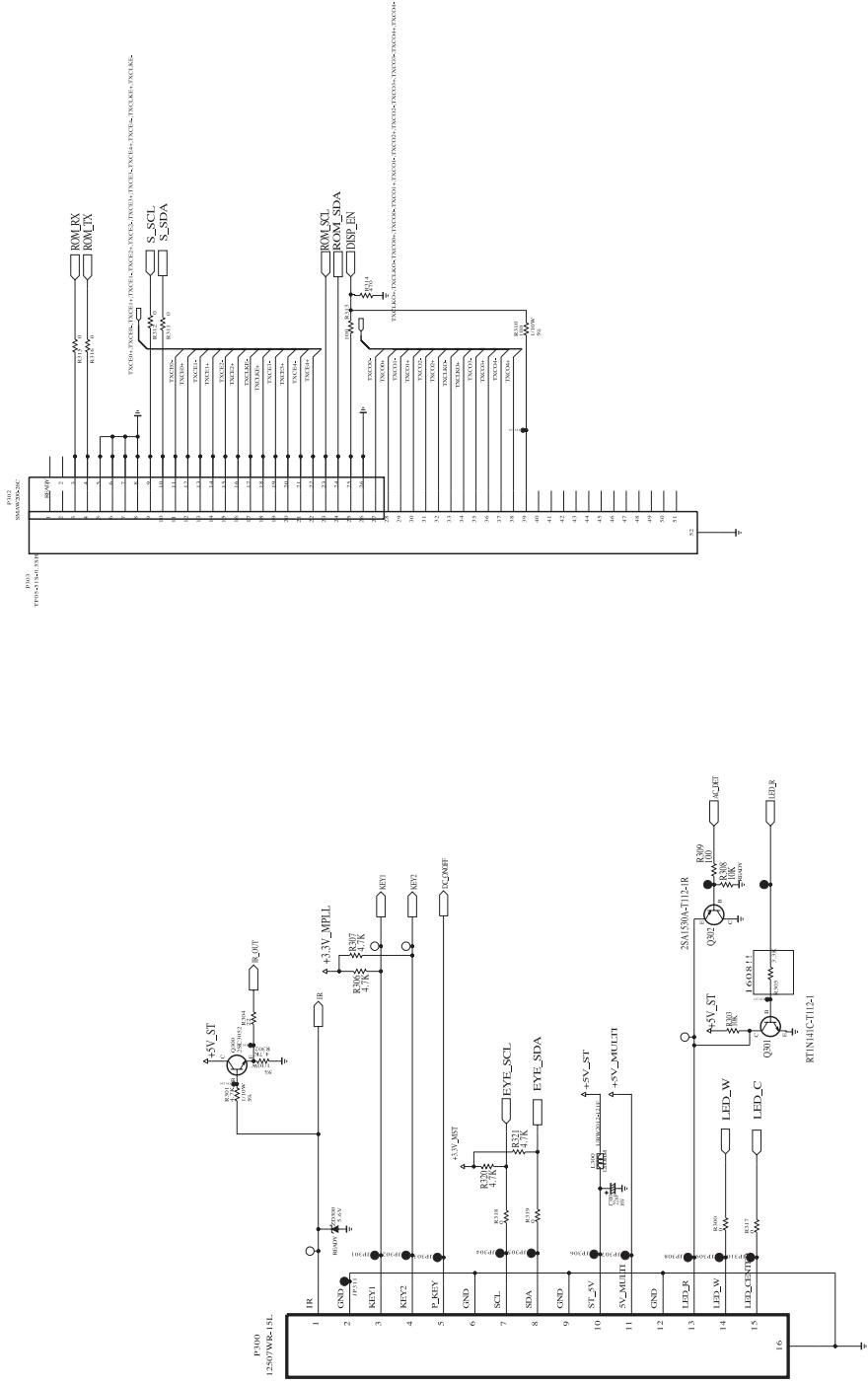
INPUT1 : COMP1/2,AV IN/OUT,RS-232C,D-SUB
MODEL MSTAR_N-EU DATE 2008/11/05
BLOCK INPUT1 SHEET 8

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INPUT1 : COMP1/2,AV IN/OUT,RS-232C,D-SUB
MODEL MSTAR_N-EU DATE 2008/11/05
BLOCK INPUT1 SHEET 8

EAX60695401
MSTAR PDP NONEU

KEY & PANEL WAFER



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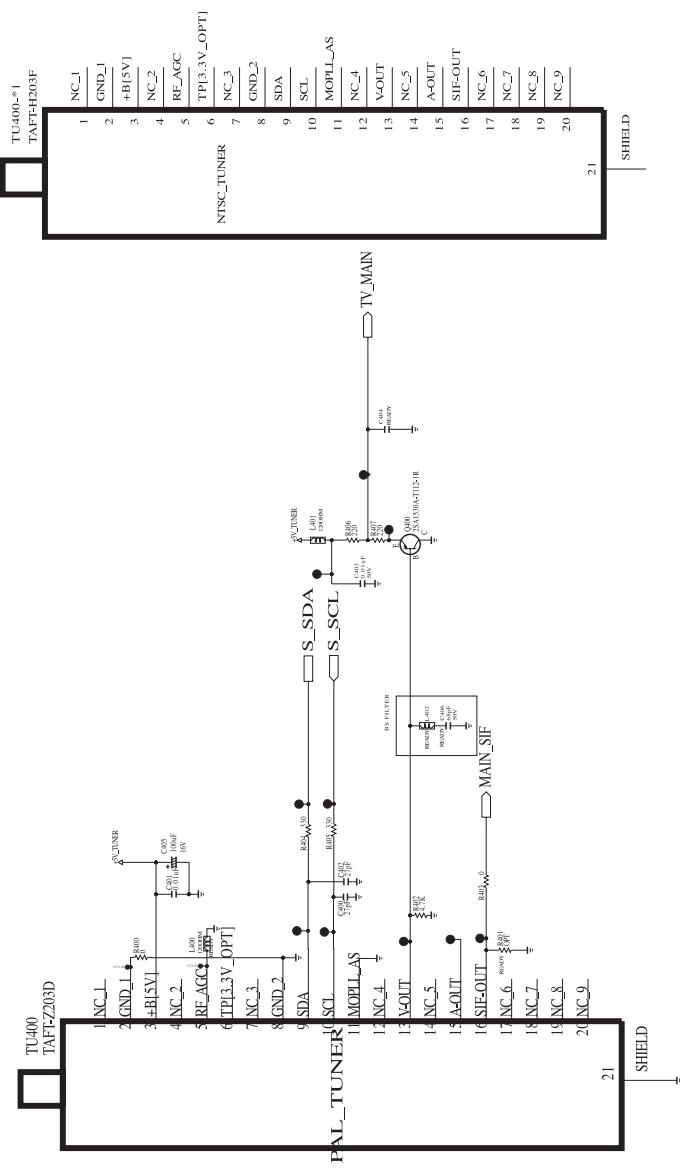
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MODEL	MSTAR	DATE	2008/11/05
BLOCK	LVDS,CTR KEY	SHEET	3 / 8

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MSTAR PDP NONEU

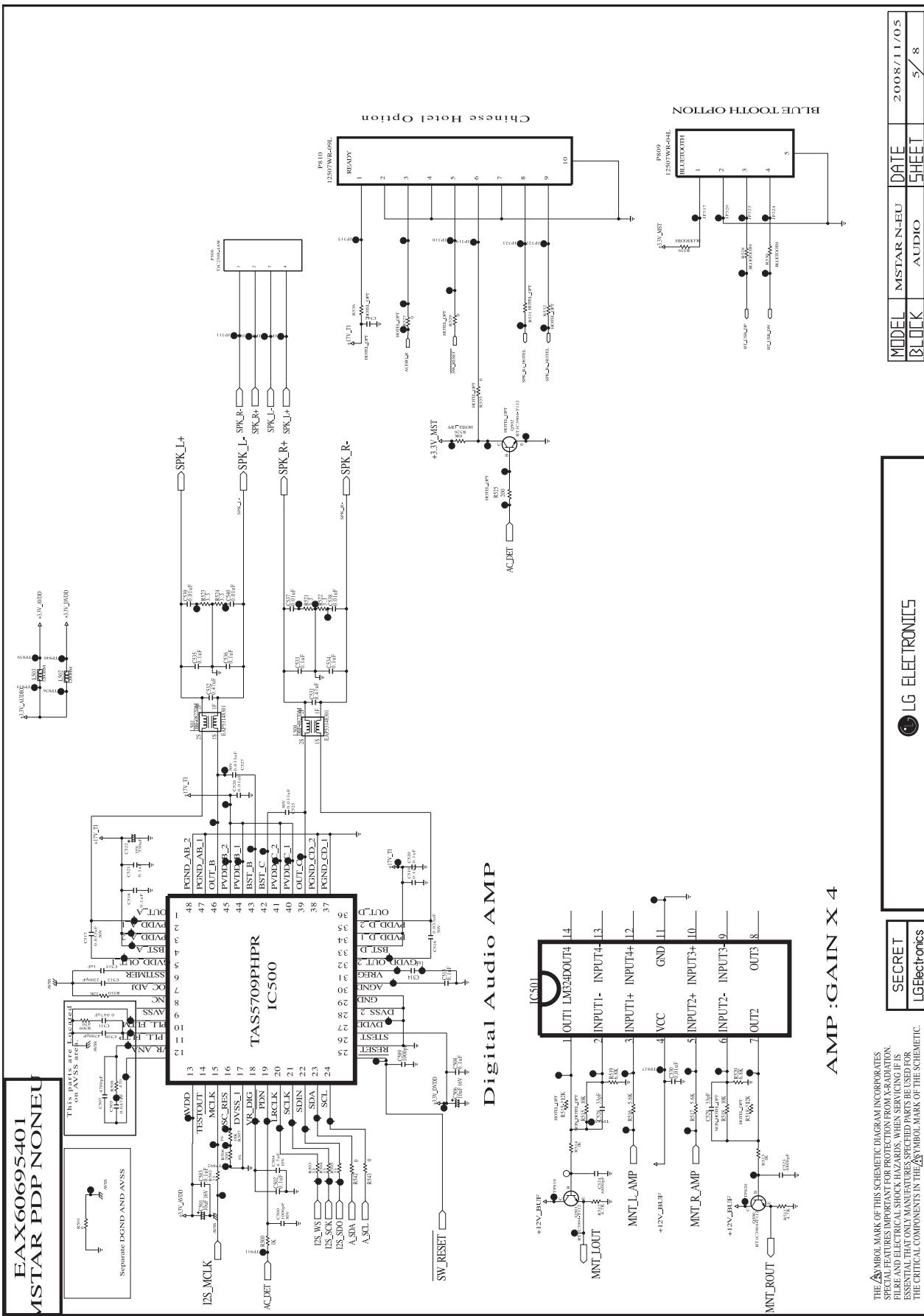


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SECRET
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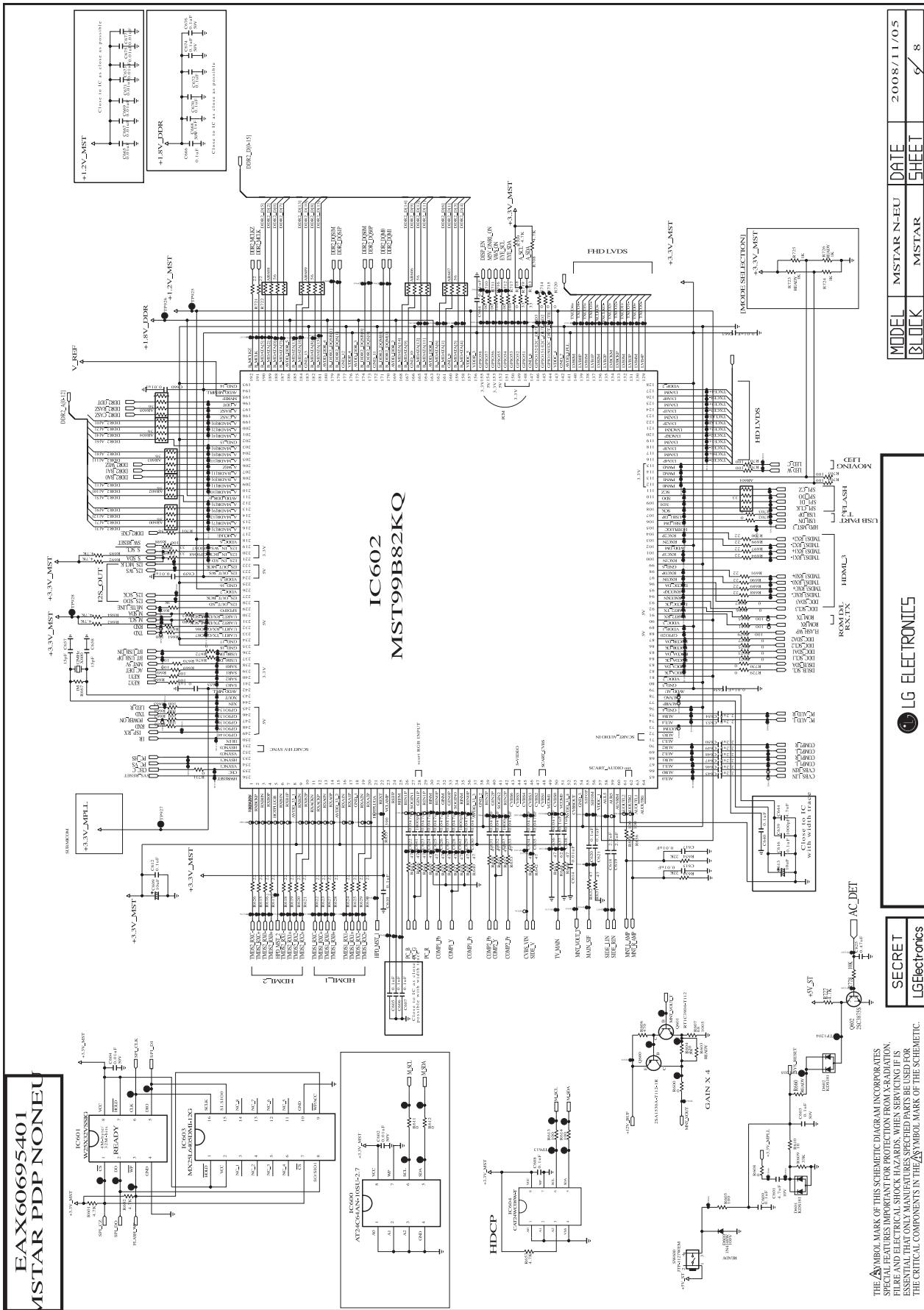
LG ELECTRONICS

MODEL	MSTAR	DATE	2008/11/05
BLOCK	TUNER	SHEET	4/8



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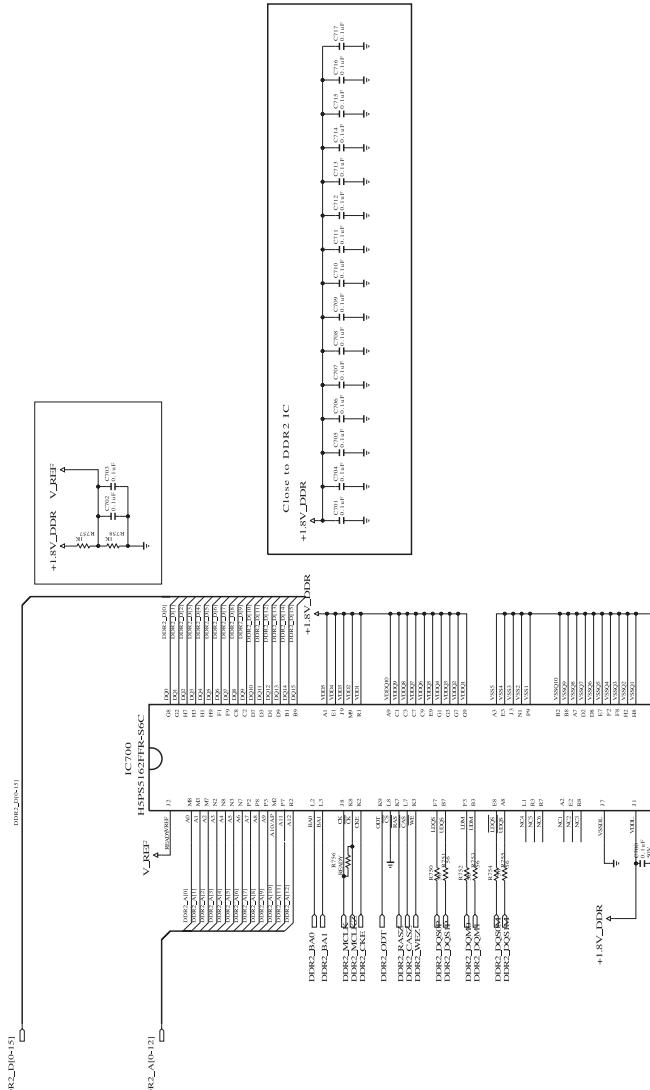
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MODEL
MSTAR_N-EU
BLOCK
MSTAR

DATE
2008/11/05
SHEET
9/8

EAX60695401
MSTAR PDP NONEU

#9.DDR2



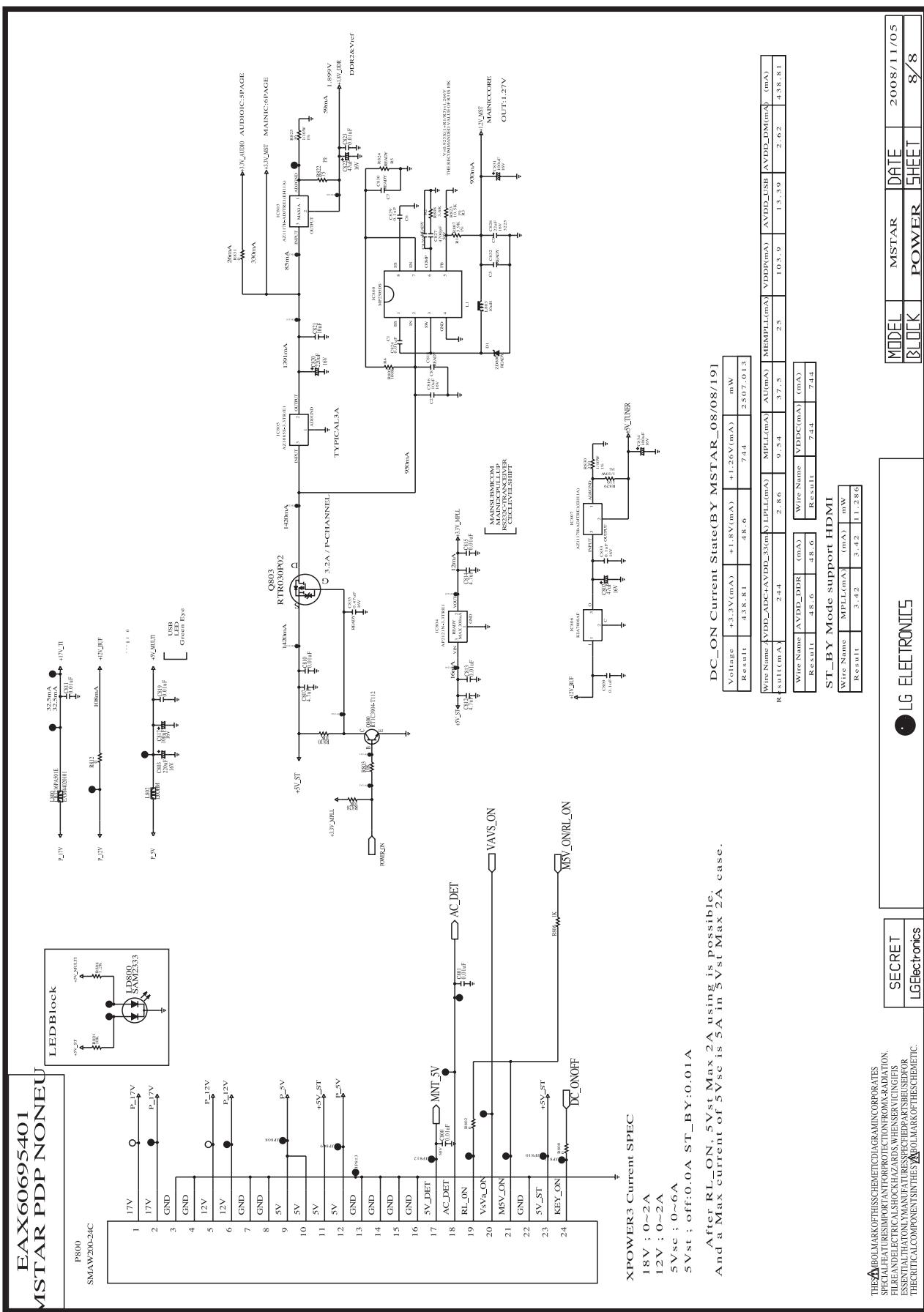
DDR2 MEMORY

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MODEL	MSTAR	DATE	2008/11/05
BLOCK	DDR2	SHEET	7/8



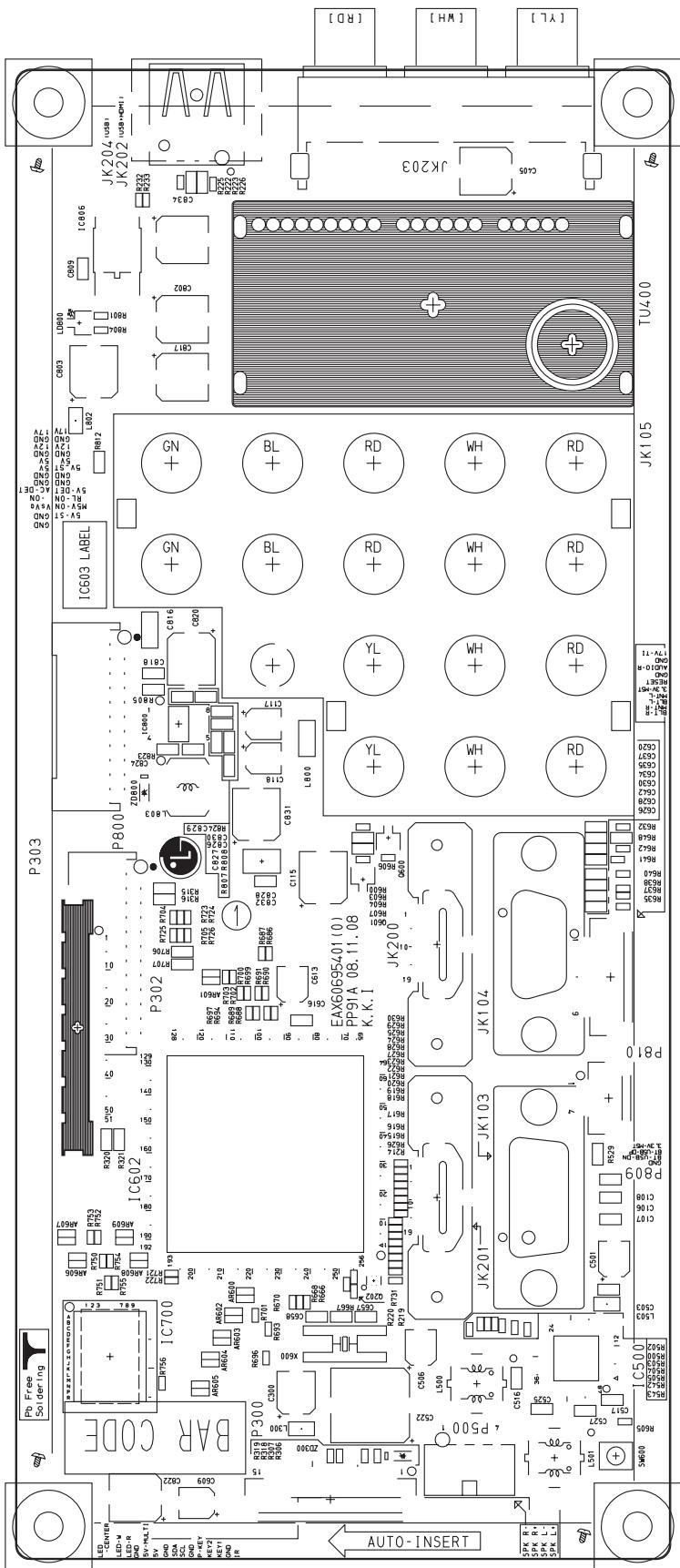
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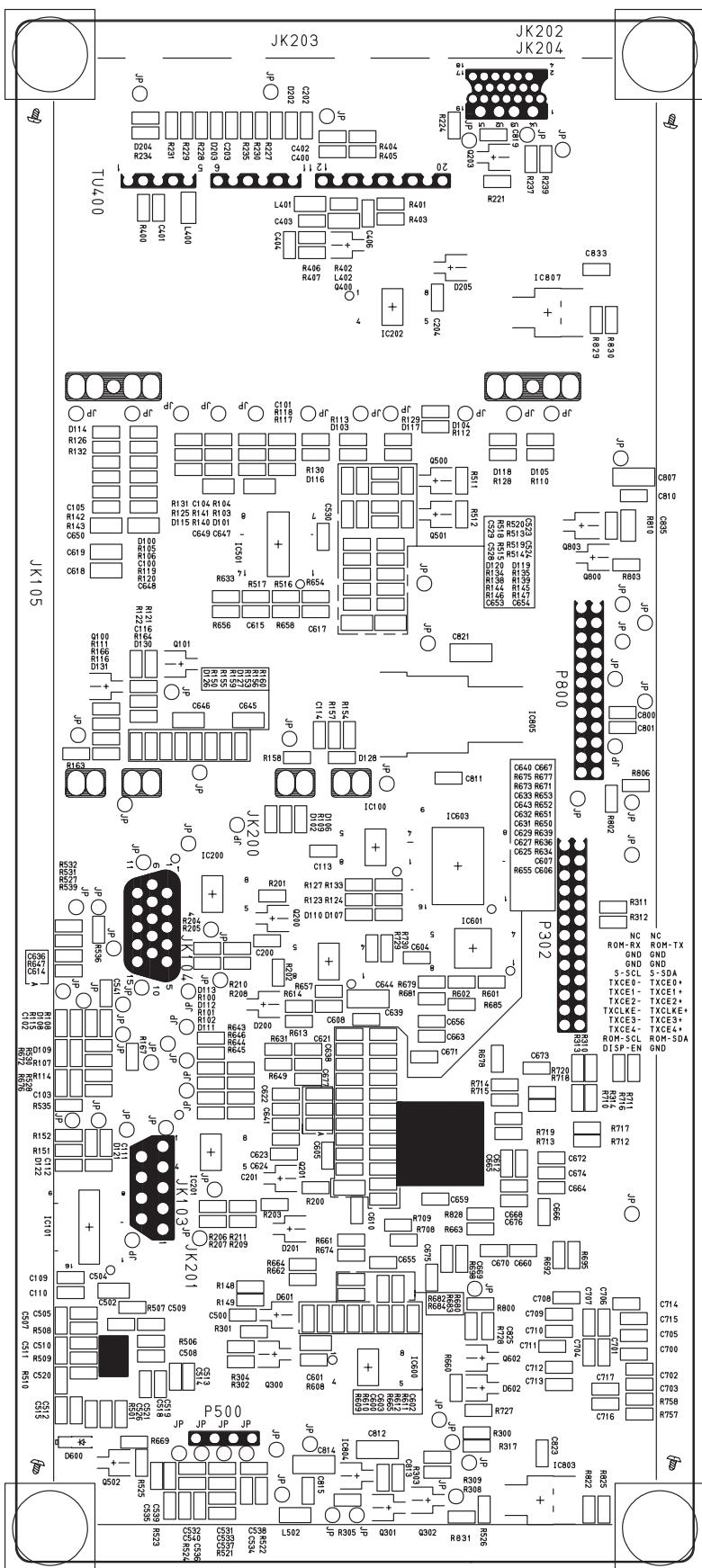
THE **A** BOLMARK OF THIS SCHEMATIC DIAGRAM INCORPORATES THE FOLLOWING FEATURES: IMPORTANT FOR PROTECTION FROM RADIATION, FILAMENT ELECTRICAL SHOCK HAZARDS, WHENEVER CIRCUITIFS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS. THE **A** BOLMARK OF THIS SCHEMATIC.

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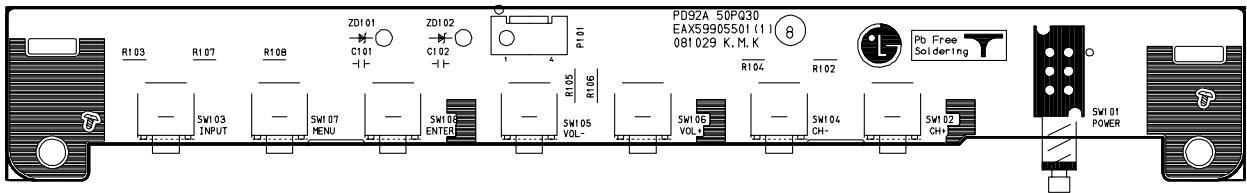
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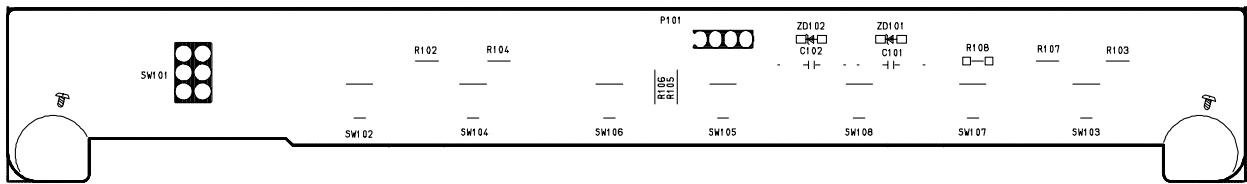
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